



SODIUM PERMANGANATE OXIDATION TREATMENT

DRY CLEANING FACILITY INDIANAPOLIS, INDIANA

Client: Private Consulting Firm
Contaminants: Chlorinated Hydrocarbons
Impacted Matrix: Soil and Ground Water
Scope of Work: Permanganate Oxidation Bench Scale Study & In-Situ Treatment

Project Specifics

Specialty Earth Sciences, LLC was contracted to provide reduction of chlorinated volatile organic compound (CVOC) mass present within saturated soils and ground water located adjacent to a dry cleaning facility. Shallow ground water, tight heterogeneous soils, utility corridors, and complicated logistics provided for a very challenging remedial application. Permanganate oxidation was selected for feasibility bench testing analysis based upon the chemical properties of the contaminants, local geology, and the historical geochemical profile of the impacted area of concern.



Feasibility Bench Scale

Results of the bench scale testing demonstrated CVOC concentration level reduction within the augmented soil column reactor batches upon the addition of permanganate oxidant solution.

The slated goals of the bench scale testing was to develop data that could be used in (i) quantifying the level of chlorinated hydrocarbon oxidation efficacy



under mimicked site specific conditions; (ii) identification and evaluation of naturally occurring geochemical interference factors; (iii) evaluation of geophysical soil sample characteristics related to future in-situ field implementation.

In-Situ Permanganate Application

Chemical injections were implemented over a twelve hour day utilizing a concentrated mixture of sodium permanganate solution. A total of 1,100 lbs. of sodium permanganate was injected into the subsurface formation utilizing type II constructed permanent wells. Targeted geology consisted mainly of sandy clays with intermittent sand stringers; with a seasonally perched water table.

Permanganate Oxidation Injection Effectiveness

Performance monitoring is pending.

